MMR Vaccine and Autism: The Hypothesis and CDC's Conclusion

Recently, there has been some public interest in a theory that suggests the measles-mumps-rubella (MMR) vaccine, or that immunizations in general, may be linked to autism. CDC believes that the current scientific evidence does not support the hypothesis that MMR, or any combination of vaccines, cause the development of autism.

The Initial Hypothesis

An initial observation linking autism and MMR vaccine was reported by Dr. Andrew Wakefield of the Royal Free Hospital in the United Kingdom. Dr. Wakefield and his colleagues first attempted to link measles disease and vaccination to bowel diseases such as Crohn's Disease. Dr. Wakefield suggested that MMR vaccination led to intestinal abnormalities, resulting in impaired intestinal function and developmental regression within 24 hours to a few weeks of vaccination. This hypothesis, which suggested that children experienced developmental regression shortly after receipt of MMR vaccine, was based on 12 children.

Scientific Evidence Regarding Vaccines and Autism

CDC believes that the current scientific evidence does not support the hypothesis that the MMR vaccine, or any combination of vaccines, causes the development of autism. The research that supports this statement includes:

- The British Committee on Safety of Medicines convened a "Working Party on MMR Vaccine" to conduct an extensive review of several hundred cases reported to a group of solicitors as having developed autism or Crohn''s (inflammatory bowel) disease as the result of immunization with the MMR vaccine. The Working Party concluded that the information available, given the limitations, ". . . did not support the suggested causal association or give cause for concern about the safety of MMR or MR vaccines."
- A study in *The Lancet* by Dr. Brent Taylor and colleagues provides the best population-based evidence regarding MMR vaccination and autism. The authors identified all 498 known cases of autism spectrum disorders (ASD) in children living in certain districts of London who were born in 1979 or later and correlated the cases to an independent vaccination registry. The results of this study were:

  1. Despite an increase in the number of diagnosed ASD cases since 1979, no jump occurred after the introduction of the MMR vaccine in 1988. Such a jump would have been expected if MMR was causing a substantial increase in autism cases.

  2. Children who were vaccinated before 18 months of age were diagnosed with autism at ages similar to children who were vaccinated after 18 months of age, indicating that the vaccination

did not result in earlier expression of ASD characteristics. If MMR were causing many autism cases, it would have been expected that children vaccinated at a younger age would develop autism at a younger age than children vaccinated at older ages.

3. At age two, the MMR vaccination coverage among ASD cases was nearly identical to vaccination coverage of children in the same birth cohorts in the same London districts, providing evidence of a lack of overall association between ASD and the vaccination.

4. In general, the first diagnosis of autism or initial signs of behavioral regression were not more likely to occur within time periods following MMR vaccination than during other time periods.

A study conducted in Sweden by Gillberg and Heijbel, involved 55 known cases of autism, and also showed no evidence of association between the MMR vaccine and autism. The study compared autism prevalence rates in populations of children from two communities in Sweden. The results indicated no difference in autism prevalence between children born after the introduction of the MMR vaccine in Sweden and those born before the vaccine was used. In summary, at this time, the weight-of-evidence does not support an association between the MMR vaccine and autism.